1. **DESCRIBE THE PRACTICE PROPOSED FOR RECOGNITION, AND LIST ITS OBJECTIVES. DETAIL HOW THE PRACTICE IS INNOVATIVE, HOW IT PROMOTES HIGH STUDENT ACHIEVEMENT AND HOW IT CAN BE REPLICATED.**

The Summer Scholars Program is one component of the Youth Career Development Initiative Program our district has implemented in accordance for the School To Careers and College Initiative state mandates. The Summer Scholars Program consists of several programs connected with colleges and universities focusing on careers in science and math. During the summer of 1998, our district had 102 students participating in ten programs (Upward Bound, Summer Academy, Engineering Prep Bridge, Urban Civil Summer Institute, Urban Engineering, Presidential Classroom, Project SEED, Careers in Health, SMART, Bio-Trek, FEMME, and CHIME) with seven colleges/universities (Stevens Institute, NJIT, UMDNJ, Fordham, Princeton, Cook, Hunter, NYU and Rutgers.) The SSP is divided into three segments: (1) internships in research, (2) enrichment classes, and (3) college courses.
1. Research - The Summer Scholars Program enhances the students' academic ability and interest in mathematics and science by providing opportunities to work on projects with scientists/professors/mentors and conduct research exercises in the fields of engineering, biology, physics, and chemistry. Students receive academic, financial aid and career counseling during their summer internships with scientists/professors/mentors. The instructional mode involves classroom discussion, laboratory activities, seminars and field trips. Activities ensure that students are aware of requisite science and mathematics courses necessary to qualify for admission to college and of career opportunities and requirements in engineering and science. Experiences this past summer included students performing research in: human computer labs developing tele-rehabilitation devices; and virtual design and fabrication labs involving rapid prototyping processes, as well as projects in microbiology, ceramic engineering, botany, biochemistry, and physics. All students present their findings at Seton Hall University and NYU. They will be presenting at Hofstra, the Junior Science Symposium, NJ Academy of Science, and the County Science Fair. Several students presented their findings at the National Convention of American Chemical Society in Boston. Depending on the program involved, students continue their research throughout the academic year. In alignment with our districts Youth Career Development Initiative Program, students will receive high school credit in accordance with the research hours they performed — 5 credits are awarded in Community Service for 120 hours, and 10 credits are awarded in Supervised Cooperative Education for 240 hours.
2. Enrichment - Students interested in careers in engineering were provided with intensive course work in mathematics, calculus, physics and engineering principles during five weeks in the summer. This intensive academic experience is supported by counseling and mentoring activities with college students of similar backgrounds.
3. College Credit - Through the Summer Academy Program ten students earned up to eight college credits in small customized classes taught by New Jersey Institute of Technology faculty. Course credits can be applied toward an undergraduate degree at NJIT and at most other colleges and universities.

The objectives of the Summer Scholars Program follow. Students will:
1. Work under the guidance of an experienced scientist/professor.
2. Learn to access the most up-to-date, comprehensive existing information using technology.
3. Design a research project; and collect and analyze data and evidence.
4. Draw conclusions from data and evidence; and share conclusions with peers and mentors.
5. Sharpen their reasoning powers and problem-solving ability, and improve their oral communication skills.
6. Be encouraged to take the proper high school preparation for engineering, science, and technological careers.
7. Be exposed to careers in mathematics, science, engineering and technology.
8. Be provided with intensive course work in mathematics, calculus, physics and engineering principles.

The Summer Scholars Program is innovative by providing a bridge for high school students with colleges/universities in the fields of science, math and technology. The SSP gives the students the opportunity to work under the mentorship of scientists using state-of-the-art research and who are part of the internationally networked science community.

High student achievement is reflected in participants: (1) presenting at national and state scientific conferences; (2) undertaking the higher level high school courses in preparation for engineering, science and other technological careers; (3) attending four year colleges and universities, including ivy league schools, and choosing majors in engineering, science and mathematics-related fields; (4) achieving higher SAT scores.

The Summer Scholars Program can be replicated by high schools establishing links with local colleges and universities, the scientific community, and scientific organizations to provide meaningful research projects for students under the guidance of a scientist/professor/mentor. Many such programs are already in place.

2. DESCRIBE THE EDUCATIONAL NEEDS OF STUDENTS THAT THE PRACTICE ADDRESSES AND HOW THEY WERE IDENTIFIED. LIST THE CORE CURRICULUM CONTENT AND CROSS-CONTENT WORKPLACE READINESS STANDARDS ADDRESSED BY THE PRACTICE AND DESCRIBE HOW THE PRACTICE ADDRESSES THE STANDARDS.

The educational needs of students are met through a diversity of summer and academic year programs that pique students' scientific interest, fill in the math and science gaps in their education, create new learning opportunities, and provide new skills, academic support and career motivation.

The Summer Scholars Program addresses the following Core Curriculum Content Areas:

1. Language Arts/Literacy
2. Mathematics
3. Science

Through hands on research in the areas of engineering, science, and technology, students are provided the opportunity to learn from scientist/professors the techniques and problem solving methods used in today's industries. Students are required to write a report and abstract and make an oral presentation at the conclusion of their internship. Students learn how to collect data, analyze data, develop charts, generate graphs, compare data from different experiments, and generalize. All these skills are required by the current High School Proficiency Test and the forthcoming High School Proficiency Assessment. Through the research, students realize the interrelationship between math, science and language arts in a practical setting. They can see how the three components blend together in a real life situation. Students' presentations at national and state conferences develop self-confidence and self esteem, as well as verbal and written communication skills. This opens the doors for students to participate in co-op and inroads programs in postsecondary education

The Summer Scholars Program addresses the following Cross Content Workplace Readiness Standards:

1. All students will develop career planning and workplace readiness skills.

The Summer Scholars Program offers students first hand experience in engineering, technology and science related careers. The workplace has changed radically, and research experience can provide students with many of the skills needed for workplace success. In this hands on environment, a student must think critically in order to identify and analyze information. Students work actively in a team to formulate conclusions..

2. All students will use information, technology, and other tools.

Using up-to-date technology students work actively with scientists and professors to create solutions in a state-of-the-art laboratory. Students may have the opportunity to publish innovative results in scientific journals.

3. All students will use critical thinking, decision-making, and problem solving skills.

The Summer Scholars Program fosters the ability to identify problems, design a research plan to arrive at answers, collect data and evidence, analyze the outcome, generalize and formulate a conclusion. All students projects involve problems facing our society in the fields of health and medicine, botany, chemistry, engineering, environmental science, microbiology, physics and zoology.

4. All students will demonstrate self-management skills.

Students must follow a rigorous schedule while conducting research and present reports in a timely manner. Students must prepare for oral presentations at local, state, and national competitions.

5. All students will apply safety principles.

Every student is given instruction on laboratory safety procedures. On some occasions, students were required to attend safety seminary and workshops before starting their research.

3. **DOCUMENT THE ASSESSMENT MEASURES USED TO DETERMINE THE EXTENT TO WHICH THE OBJECTIVES OF THE PRACTICE HAVE BEEN MET.**

The assessment measures used to determine the extent to which the objectives of the practice have been met are as follows:

1. A time sheet of students hours is completed by the scientist/professor/mentor. A student successfully completing 120 hours qualifies for 5 credits in Community Service under the districts Youth Career Development Initiative Program. A student successfully completing 240 hours qualifies for 10 credits in Community Service under the districts Youth Career Development Initiative Program.
2. At the conclusion of the summer program a rubric assessing students performance in the following areas is scored by the scientist/professor/mentor:
    a. Attendance/punctuality
    b. Cooperating/following directions
    c. Communicating effectively
    d. Solving problems presented.

    Specific comments of commendation and/or areas of improvement are encouraged. The grade the student receives for Community Service or Supervised Cooperative Education is based on the score received on this ruberic.
3. Students write an abstract and full report of their findings.
4. Students present their findings written and orally at national and state scientific conference and participate in science fairs and state and national competitions.
5. Students taking courses receive standardized and teacher-made tests during and at the end of the program, and if successful receive college credit.